## 10 ION CHROMATOGRAPH (IC)

**A.** The IC pneumatics are operated from a gas cylinder of helium. Line pressure is maintained at greater than 70*psi*. The tank is replaced when the pressure falls below ≈300*psi*. Helium is used to provide pressure for the eluent. Helium pressure is maintained at approximately 5-6*psi*.

**B.** The Dionex reference standard for the anion system consists of fluoride, chloride, nitrate, sulfate, and phosphate ions. Nitrite, chlorite and chlorate will be added when necessary. When applicable, perchlorate is used as a reference standard. The reference standard for the cation system consists of lithium, sodium, ammonium, potassium, and calcium. The approximate concentrations of each are as follows: (Note: ppm = mg/l)

| Anions | Anions | Cations |
| --- | --- | --- |
| Fluoride - 2 ppm | Perchlorate – 10 ppm | Lithium - 5 ppm |
| Chloride - 3 ppm | | Sodium - 20 ppm |
| Nitrate - 10 ppm | | Ammonium - 40 ppm |
| Phosphate - 15 ppm | | Potassium - 20 ppm |
| Sulfate - 15 ppm | | Magnesium - 20 ppm |
| [Nitrite – 10 ppm] | | Calcium - 100 ppm |
| [Chlorite – 10 ppm] | | |
| [Chlorate – 10 ppm] | | |

**C.** The system is configured with the necessary eluant, regenerant, columns, suppressors, and detector as established by Dionex Corporation.

**D.** The IC system is calibrated prior to each day's usage. The system is initially flushed until an acceptable and stable baseline is established. The appropriate reference standard is injected until system stability is demonstrated by two successive, reproducible chromatograms. These chromatograms are evaluated subjectively on the basis of relative retention times, peak resolution, baseline stability, and peak heights. The following parameters are checked and recorded in a logbook: date, column used, system pressure and background conductivity. The retention times of key components (chloride, nitrate, sulfate, and phosphate) are also recorded.

**E.** All appropriate standards and blanks are run with the casework. The calibration standard is run both prior to and following all casework on the day of use.

**F.** Corrective procedures are performed on the unit as required through monitoring the parameters and performance.

**G.** A service contract is maintained through the manufacturer, and the instrument receives an annual diagnostic check, including the electronics.

♦End